

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number
WO 2005/059140 A1

(51) International Patent Classification⁷: C12N 15/53, 9/02, 5/10, 15/82, C12P 7/64, A01H 5/00, C07K 14/195, C12N 15/31

(21) International Application Number:
PCT/CA2004/002156

(22) International Filing Date:
17 December 2004 (17.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2,450,000 18 December 2003 (18.12.2003) CA

(71) Applicant (*for all designated States except US*): ALBERTA RESEARCH COUNCIL INC. [CA/CA]; 250 Karl Clark Road, Edmonton, Alberta T6N 1E4 (CA).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): SHAH, Salehuzzaman [CA/CA]; 4121 - 33A Avenue, Edmonton, Alberta T6L 7G6 (CA). WESELAKE, Randall [CA/CA]; 49 Coachwood Rd. W., Lethbridge, Alberta T1K 6B7 (CA).

(74) Agent: SMART & BIGGAR; P.O. Box 2999, Station D, 900 - 55 Metcalfe Street, Ottawa, Ontario K1P 5Y6 (CA).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/059140 A1

(54) Title: TRANSGENIC PLANTS WITH REDUCED LEVEL OF SATURATED FATTY ACID AND METHODS FOR MAKING THEM

(57) Abstract: The present invention provides transgenic plants with reduced levels of saturated fatty acids in the seed oil and methods of making these plants. The transgenic plants developed through this method contain reduced levels of saturated fatty acids in seed oil due to expression of a prokaryotic delta-9 desaturase enzyme (i.e. an enzyme that introduces cis double bonds at the delta-9 position of saturated fatty acids) operably linked with an endoplasmic reticulum retention and retrieval signal sequence. One example of the invention is a plant expressing a heterologous delta-9 desaturase enzyme from cyanobacterium *Anacystis nidulans*, which converts lipid-bound 16:0 and 18:0 fatty acids into corresponding 16:1 and 18:1, in operative linkage with a KKSS (SEQ ID NO:5) endoplasmic reticulum retention and retrieval signal sequence.